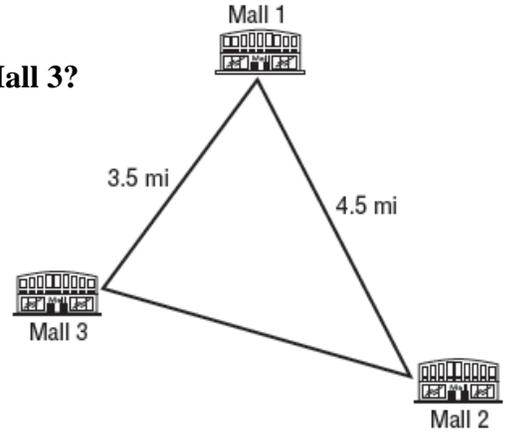# STRAND 2: Triangles

1. The locations of three shopping malls form a triangle on a map.
   Which *best* describes the possible distances between Mall 2 and Mall 3?

    A) Greater than 1 mile and less than 8 miles

    B) Greater than 8 miles

    C) Greater than 1 mile

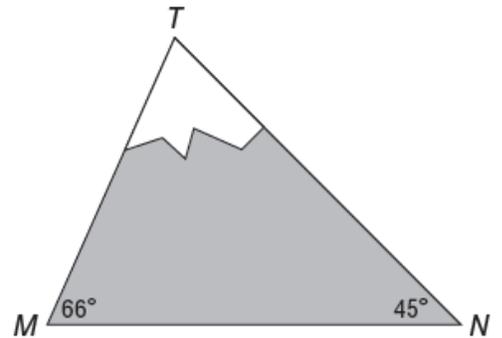   D) Greater than 15.75 miles

2. $\triangle$MNT is a mountain with angle measures as shown.
   Order the side lengths from least to greatest.

$\angle M$	$\angle N$	$\angle T$	MN	NT	MT

3. Three bars of a bicycle frame form a triangle.
   Which metal bar lengths could not be used to form the triangle?

    A) 2 ft, 1.6 ft, 1.3 ft

    B) 1.6 ft, 2.4 ft, 3.1 ft

    C) 3.5 ft, 2.3 ft, 1.1 ft

    D) 1.8 ft, 2.1 ft, 3 ft

4. If AB = 5, BC = 4, and AC = 3, determine which triangle, defined by vertices at the given points, is congruent to triangle ABC.

    A) D (3, 4), E (3, 1), F (-2, 4)   B) D (2, -1), E (2, -4), F (6, -1)

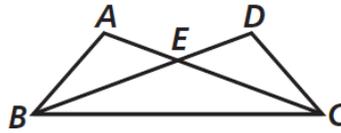   C) D (2, 0), E (-8, 0), F (2, -6)   D) D (0, 0), E (4, 4), F(8, 0)

5. A 50 ft tall tree is casting a shadow while the sun is at an angle of elevation of 63°. To the nearest foot, how long is the tree's shadow?

    A) 25 feet   B) 56 feet   C) 98 feet   D) 110 feet

6. Give the reason for the statements to complete the following proof.

Given: $\overline{AE} \cong \overline{DE}$; $\angle EBC \cong \angle ECB$

Prove: $\overline{AB} \cong \overline{DC}$

Statements	Reasons
1. $\overline{AE} \cong \overline{DE}$	1. Given
2. $\angle EBC \cong \angle ECB$	2. Given
3. $\overline{BE} \cong \overline{CE}$	3.
4. $\angle AEB \cong \angle DEC$	4.
5. $\triangle AEB \cong \triangle DEC$	5.
6. $\overline{AB} \cong \overline{DC}$	6.

Vertical Angles are congruent

Side Angle Side Congruence Pos

Reflexive Property of Equality

Corresponding Parts of Congruent Triangles are Congruent

Angle Angle Side Postulate

If the legs of an Isosceles Triangle are congruent, then the corresponding legs are congruent.
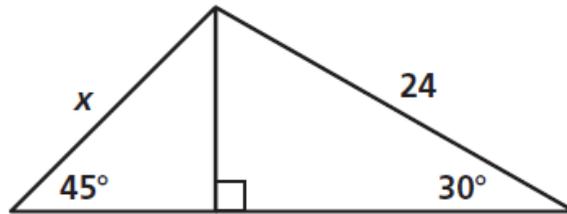
7. Find the value of x.
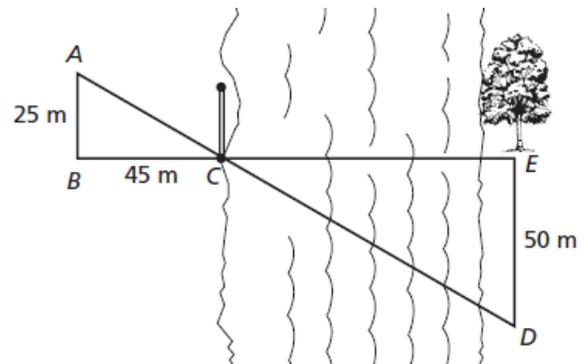
A) $12\sqrt{2}$ B) $24\sqrt{2}$

C) 12 D) 24

8. A student is trying to measure the distance across a river. She places a stick directly opposite a tree on the other side and constructs the triangles shown in the picture. How far is it across the river (CE)?
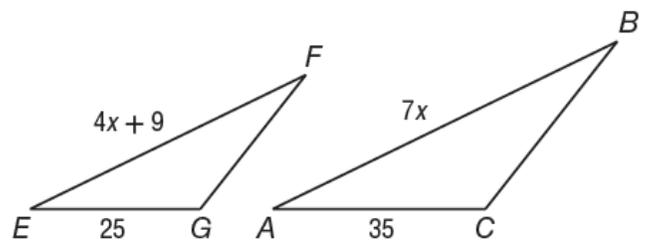
Distance =

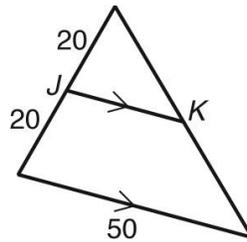**9. For what value of x will the two triangles be similar?**

A) 3 B) 5

C) 7 D) 9

10. **What is *JK*?**

   A) **20**   B) **40**

   C) **25**   D) **50**

11. **To the nearest tenth, the sides of a right triangle measure 56, 33, and 65. To the nearest degree, what is the measure of the smallest angle?**

   A) 30°   B) 31°   C) 32°   D) 58°

12. **From the top of a canyon, the angle of depression to the far side of the river is 52°. The angle of depression to the near side of the river is 79°. The depth of the canyon is 400 feet. To the nearest foot, how wide is the river at the bottom of the canyon?**

   A) 104 ft   B) 235 ft

   C) 204 ft   D) 785 ft
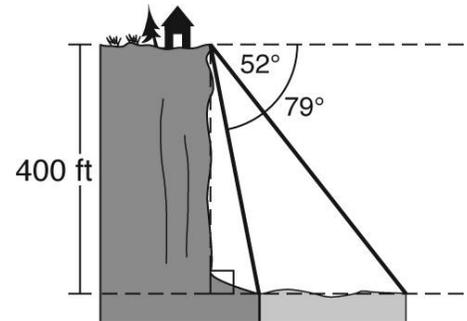
13. **A wheelchair ramp makes an 8° angle with the ground. To the nearest tenth, what is the ramp length if it rises 0.4 m?**

   Ramp Length =

14. **A utility worker is installing a 25-foot telephone pole. The work order indicates that two guy wires (a wire running from the ground to the top of the pole) should be placed opposite each other and at a 65° angle of elevation to the pole. To the nearest tenth of a foot, how far apart are the guy wires? If necessary, compute any trigonometric ratios at least to the nearest hundredth.**

   A) 11.7 ft   B) 27.6 ft   C) 23.3 ft   D) Not here